www.safetycenter.navy.mil

Were the following mishaps **preventable**?

3
Temporary Insanity II

330
AD
NAVY

Overview

Operational Risk Management

Why ORM?

Implementation Strategy

Process

Resources

Summary

Why Risk Management?

DON's Guidance

"…**Integrate Safety and Risk Management into all on and off-duty evolutions** to maximize mission readiness and to establish DON as an organization with world class safety where no mishap is accepted as the cost of doing business…**Establish a risk management training continuum** to ensure all DON personnel receive targeted [ORM] training and that all formal professional training courses are infused with examples of how effective risk management improves both safety and mission readiness."

)

"**We manage risk**: We will identify, analyze, mitigate and then accept risk, appreciating that we must always consider the risks in aggregate across the entire force. **Zero risk is not achievable nor affordable**. We must manage risk and move forward to accomplish the mission while safeguarding our people and infrastructure."

Accident (aka “Mishap”)

An unplanned and unfortunate event that results in damage and/or injury.

Why do mishaps occur?

hap investigations (reactive approach) reveal causal factors…

Lack of:	*Abundance of:*
- **Communication**	+ **Distraction**
- **Awareness**	+ **Complacency**
- **Resources**	+ **Norms**
- **Assertiveness**	+ **Stress**
- **Teamwork**	+ **Fatigue**
- **Knowledge**	+ **Pressure**

Over 85% of all mishap are attributable to human factors failures

Are we learning?

- **On the job?**
  - Aircraft Movement:
    - 2000: Tow tractor hit parked acft. Fatal injury.
    - 2003: During acft towing, person fatally crushed between store & dolly
    - 2004: Sqdn acft under tow direction of yellow shirt ran over ship's blue shirt. Permanent disability
    - 2005: Wing walker's leg run over by acft during move – permanent disability
    - 2006: Acft ran over airman's right leg during taxi on flight deck – permanent disability
    - 2007: While towing acft airman caught and dragged under right wheel and suffered skin and muscle damage
    - 2007: Wing walker injured while acft being towed.
  - Lack of supervision – guidance – enforcement
  - Complacency - Perceived “Low Risk” evolution
  - Loss of Situational Awareness
  - Lack of Time Critical RM

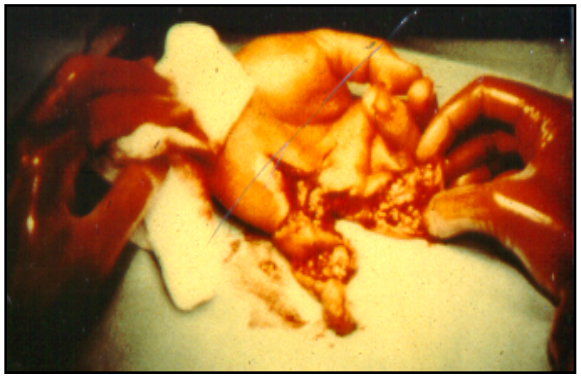
- **Off-Duty?**

Are we learning?

Are we learning?

Bottom-line

Action / Inaction by **own forces** causing losses far exceeding those caused by **Red Threat**



- **Degradation in mission readiness**
- **Impact to mission accomplishment**
- **Impact to the Team, Family & Friends**

RM is a tactic to help reduce the Blue Threa

Reaching the War Fighter

THE NAVY & MARINE CORPS AVIATION SAFETY MAGAZINE
www.safetycenter.navy.mil • September-October 2006
Approach
When You look in the Mirror, Are You
The Blue THREAT?

~~The Blue Threat~~

Puts the concepts in to terms the War Fighter understands

Hazards = Threats

ORM = Tactics

CRM = Skills

Red vs Blue

- Aviation Box Score
  - **Desert Shield /Storm**
    - Blue – 24 Class A mishaps resulting in 15 deaths
    - Red – 6 combat losses with 6 deaths
  - **Since 9-11**
    - Blue – 175 Class A mishaps resulting in 90 deaths
    - Red – 1 combat losses with zero deaths
- Ship/Sub Box Score
  - Since 30 July 1969 (earliest NAVSAFECEN data) and counting only mishaps involving 2 or more deaths:
    - Blue – 90 incidents resulting in 286 deaths, 3 ships lost: USNS Sgt. Jack J. Pendleton (Grounding), USS La Moure County (Grounding), USS Guardian (Grounding)
    - Red – 54 hostile deaths, zero ships lost: 17 deaths on USS Cole (Improvised Explosive Device), 37 deaths USS Stark (Anti-Ship Missile), No deaths on USS Samuel B. Roberts (Mine or USS Princeton (Mine)

Integration Strategy

Controls derived from In-Depth & Deliberate ORM exist everywhere,

in all activities throughout the unit

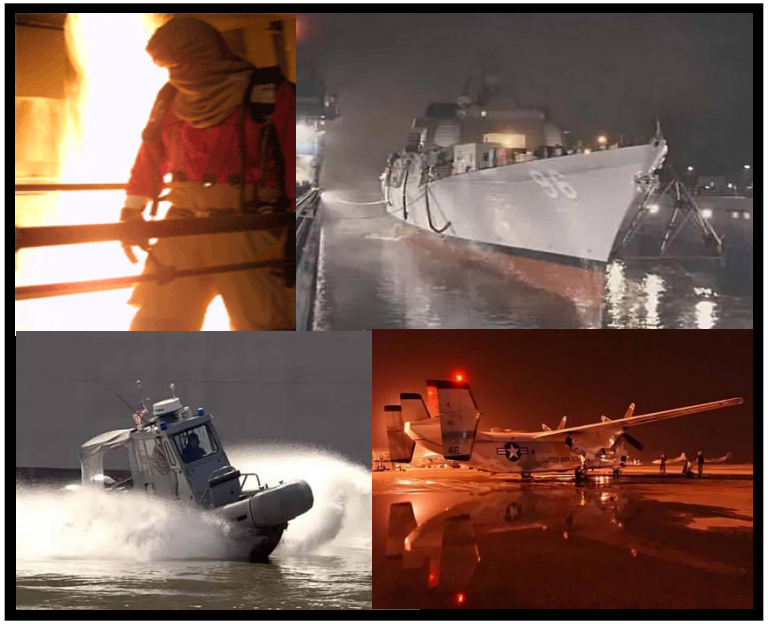
maintenance programs, redundant systems, Standard Operating Procedures, checklists, flight briefs, Rules of Engagement, flight gear, survival equipment, etc.

Establishing an ORM Mindset

- **Policy & Leadership**
  - Focus all levels of leadership on key ORM implementation issues
  - Develop and refine policy and guidance for the Fleet
- **Assessment & Feedback**
  - Accountability
  - Assist in development and integration of assessment process for the Fleet
  - Partner with force commanders and readiness evaluators
  - Institute vehicles for “Best Practice” dissemination
- **Education & Training**
  - Implement an ORM Learning Continuum from accession to retirement
  - Partner with training and accession commands
  - Standardize training and education across the Fleet
- **Resources & Tools**
  - Create and share tools to facilitate integration across the Fleet

al: Risk Management is an integral part of Navy Cultu

ORM
Where we want to be…



We will manage risk to operate by following a standardized and institutionalized common model of ORM application and assessment across the fleet.

Integrate risk management concepts across the fleet **as part of every decision** made and **every action** taken by every Sailor and DON Civilian employee – **on and off duty**

ORM Process

ORM is a systematic approach to managing risks to **increase mission success** with minimal losses. This involves identifying and assessing hazards for risk, controlling risks, supervising and revising as needed.

Risk to Mission, Force, and Self

What ORM "IS NOT"

- **About avoiding risk**
- A safety only program
- Limited to complex-high risk evolutions
- Just another program
- Only for on-duty
- Just for your boss
- Just a planning tool
- **Automatic** or Static
- **A replacement for:**
  - **Sound tactical decision making**
  - **Rehearsals and TTPs**
- A 'zero defect' mindset
- **A fail-safe process**
- A bunch of checklists
- A bullet in a briefing guide
- **An excuse to violate the law, policies, directives, or procedures**
- Someone else's job
- A well kept secret
- Difficult
- **About limiting the commander's flexibility, initiative or accountability**

What ORM "IS"

- A methodology, **applicable to any activity**, to enhance decision-making skills
- Accomplishing the mission with acceptable risk
- Planning using a **systematic, continuous and repeatable process**
- **Based on experience**
- Following TTPs
- Watching for change
- Flexible and scalable
- **Working as a team**
- **A mindset**
- **Asking "What's Different"**
- Skill and knowledge dependent
- Sharing experience, lessons learned
- About Using available tools and resources – **Resource Management**
- Applied, standardized **"common sense"**
- "Looking before you leap"
- **As in-depth as time permits**

ORM
A systematic process

3 Levels

Time Critical
Little time, done on the run, applied to control hazards introduced by unexpected events and changes to the plan.

Deliberate
Pre-mission planning, time available for planning, recorded on paper.

In Depth
Long term process with extensive research and planning

5 Steps

4 Principles

- ✓ Accept no unnecessary risk.
- ✓ Anticipate and manage risk by planning.
- ✓ Make risk decisions at the right level.
- ✓ Accept risks when benefits outweigh the costs.

3 Levels

Strategic → **Tactical**

Mission Success

- **Publications**
- **Instructions**
- **Equipment** (PPE)
- **Training Programs**

- **Planning**
- **SOPs**
- **Briefings**
- **CO Guidance**
- **OJT / Maintenance**
- **Work Center Briefings**
- **Quality Assurance**

- **Mission Execution Checklist**
- **Change Management** (Environment, Mission, Emergency Procedures, Crew Change)
- **Equipment / Systems Degradation**

Controls from one level become resources for the next.

4 Principles

- "**Anticipate and manage risk by planning**" – risks are more easily controlled when identified early in planning
  - **Integrate risk management into all levels of planning**
  - **Dedicate time and resources to apply risk management effectively**
  - **Include hazards in orders to assist subordinates**
  - **Don't assume hazards away**

4 Principles

- "**Accept risk when benefits outweigh the costs**" – the goal is not to eliminate risk, which is inherent in what we do, but to manage it so that we can accomplish the mission with minimal losses. Leaders must consider benefits and costs associated with a hazard's risks to make informed decisions.

Sustaining a bold, risk-taking organization is always a challenge in peace and war…ORM helps.

4 Principles

- "**Accept no unnecessary risks**" – only accept those risks that are necessary to accomplish the mission.

  - **If all detectable hazards and their associated causes have not been detected, then unnecessary risks are being accepted.**
  - **ORM process provides a systematic, repeatable approach to identify hazards / threats that otherwise may go undetected.**

4 Principles

- "**Make risk decisions at the right level**" – risk management decisions should be made by the leader directly responsible for the operation. If the hazard's risk cannot be controlled at his level, leaders shall elevate the risk decision to their chain of command.

Who has the legal / organizational authority to make the decision

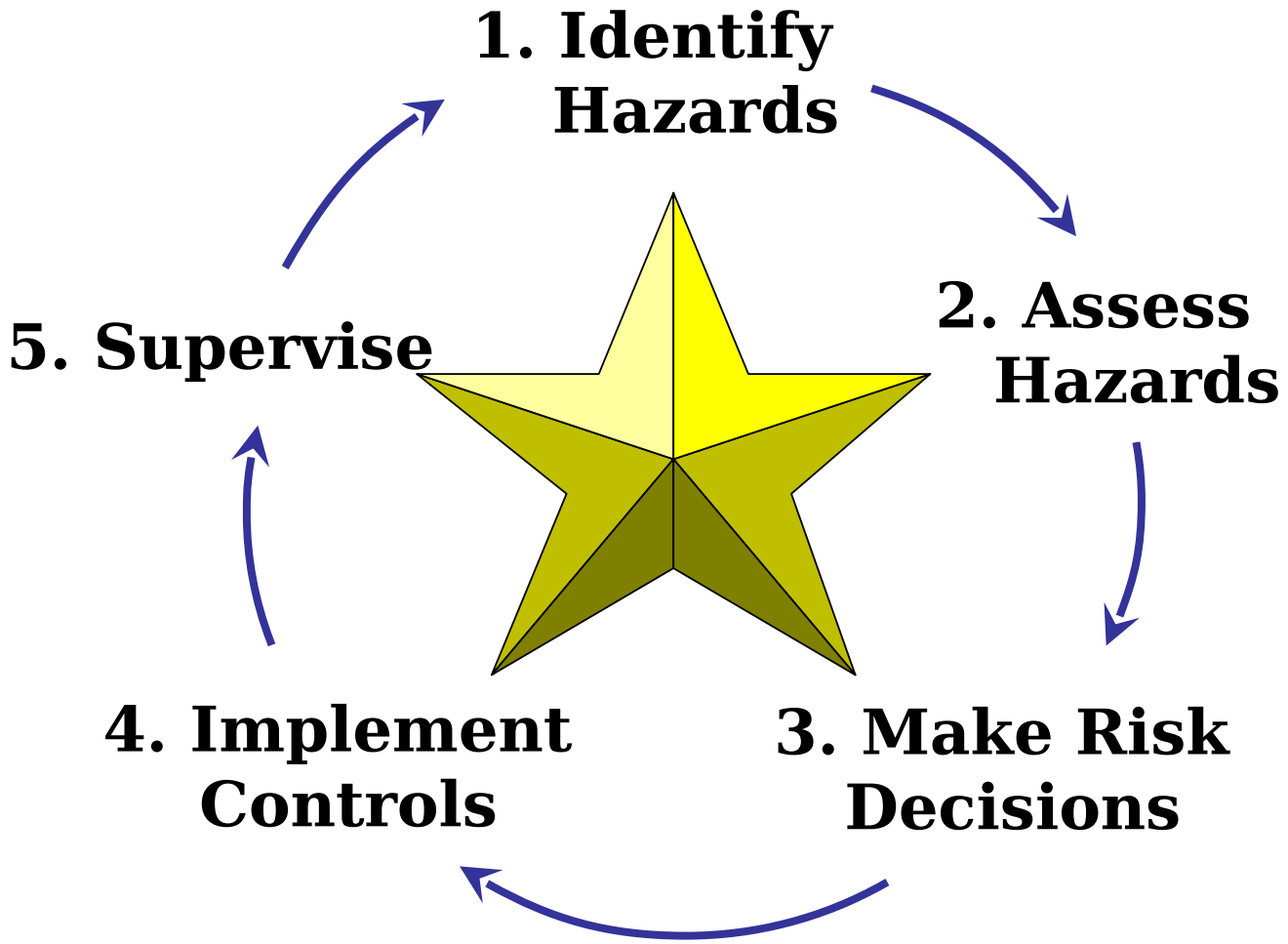
Who has the maturity and experience to make the decisions?

Who has on-scene knowledge?

Who has the resources to mitigate the risk?

Who will answer in the event of a mishap?

5 Step Systematic Process



Identify Hazards

Operational Analysis

- Determine specified & implied tasks
- Break down into small steps
- Pull from lessons learned

List Hazards

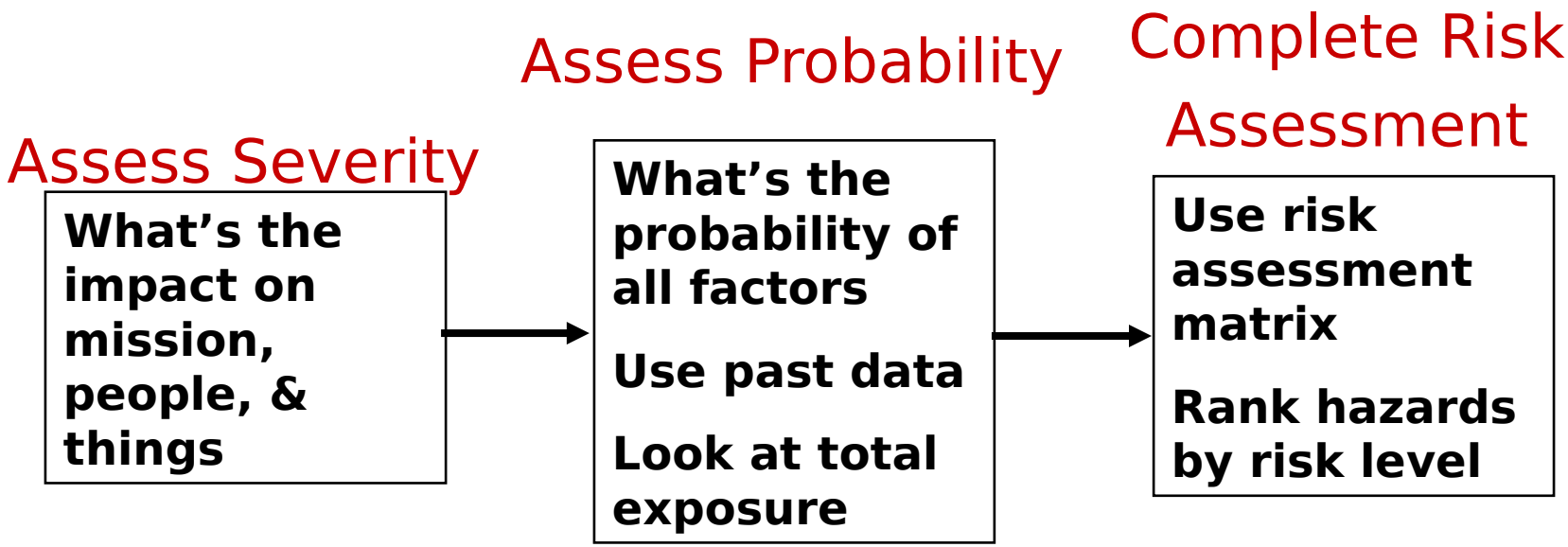
- Spend 30-40% of total ORM time
- List hazards for each step
- Use “What if…” tool
- Focus on “What’s different today?”

Determine Hazard Root Causes

- Target root causes vice symptoms
- Keep asking “Why?” until answered

Involve Operators / Subject Matter Experts

Assess Hazards


Assess Severity
What's the impact on mission, people, & things
Assess Probability
What's the probability of all factors
Use past data
Look at total exposure
Complete Risk Assessment
Use risk assessment matrix
Rank hazards by risk level

Involve Operators / Subject Matter Experts

Risk Assessment Matrix

The Risk Assessment Code (RAC) Matrix is used to determine the RAC for a hazard. You must cross probability and severity to obtain this code.

Risk Assessment Matrix				PROBABILITY			
				Frequency of Occurrence Over Time			
				A Likely	B Probable	C May	D Unlikely
SEVERITY	Effect of Hazard	I	Loss of Mission Capability, Unit Readiness or Asset; Death	1	1	2	3
		II	Significantly Degraded Mission Capability or Unit Readiness; Severe Injury or Damage	1	2	3	4
		III	Degraded Mission Capability or Unit Readiness; Minor injury or Damage	2	3	4	5
		IV	Little or No Impact to Mission Capability or Unit Readiness; Minimal Injury or Damage.	3	4	5	5

Risk Assessment Codes

1 – Critical **2** – Serious **3** – Moderate **4** – Minor **5** – Negligible

Severity and Probability

SEVERITY

Category I - The hazard may cause **death, loss of facility/asset, or mission failure.**

Category II - The hazard may cause **severe** injury, illness, property damage, or serious mission degradation.

Category III - The hazard may cause **minor** injury, illness, property damage, or minor mission degradation.

Category IV - The hazard presents a **minimal** threat to personnel safety or health,

PROBABILITY

Sub-Category A - Likely to occur immediately or within a short period of time. Expected to occur frequently to an individual item or person or continuously to a fleet, inventory or group.

Sub-Category B - Probably will occur in time. Expected to occur several times to an individual item or person or frequently to a fleet, inventory or group.

Sub-Category C - May occur in time. Can reasonably be expected to occur some time to an individual item or person or several times to a fleet, inventory or group.

Make Risk Decisions

Identify Control Options

Systems / Engineering:
- Material selection, Design
- Often not feasible

Supervisory / Administrative:
- Instructions, Policies, SOPs, ROEs
- Flight briefs, checklists
- TTPs
- Training
- Effective if properly used / enforced

Personal Protective Equipment:
- Eye & hearing protection
- Flight & survival Gear
- Least effective type of control - does not reduce the probability of a mishap occurring, it only reduces the severity when a mishap does occur.

Determine Control Effects

What's the impact on probability & severity

What's the risk control cost

How do they work together

Make Risk Decisions

Determine residual risk

Make risk decisions at right level

Ensure benefits outweigh costs

Involve Operators / Subject Matter Experts

Implement Controls

Make Implementation Clear

- **Use examples, pictures, or charts**
- **Describe expectations clearly**

Establish Accountability

- **Assign individuals clear risk control responsibilities**

Provide Support

- **Command provide personnel & resources**
- **Make it sustainable**
- **Employ a feedback mechanism**
- **Integrate into plans**
- **Consider control conflicts**

Involve Operators / Subject Matter Experts

Supervise

Monitor

Are the controls working

Manage emerging changes (ABC*D*)

Identify new hazards

Review

Measure risk controls' effectiveness

Was mission successful

Identify root causes of conditions that led to failures

Feedback

Implement new controls

Save all documentation

Recommend actionable solutions to prevent other failures

Submit lessons learned

Involve Operators / Subject Matter Experts

ORM Mind Set… Change the Perception of Risk Management

- Technique to connect all three levels of ORM
- Spurs the use of Time Critical ORM during execution
- The missing piece in ORM understanding and proper application

5-Step ORM and ABC*D*

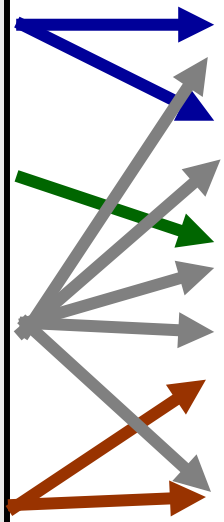
Time Critical Process and Mnemonic

A – Assess (your situation, your potential for error)

B – Balance Resources (to prevent and trap errors)

C – Communicate (risks and intentions)

D – *Do and Debrief* (take action and monitor for



5-Step Deliberate and In-depth Process

1. **Identify Hazards**
2. **Assess Hazards**
3. **Make Risk Decisions**
4. **Implement Controls**
5. **Supervise (watch**

Time Critical Risk Management

- TCRM is the level people use daily
  - Developed experiences and pattern matching
  - No time to plan – action orientated
  - Influenced by time, experience, and acquired skills
- Mental analysis verses written problem solving techniques
- TCRM is established with tailored training
  - e.g. - Emergency procedures
    - Every community teaches what's important to them
    - The ABC*D* Model of TCRM establishes a common communication structure for all Navy personnel
    - Interpreted by your knowledge, skills and abilities

ABC*D* of Risk Management

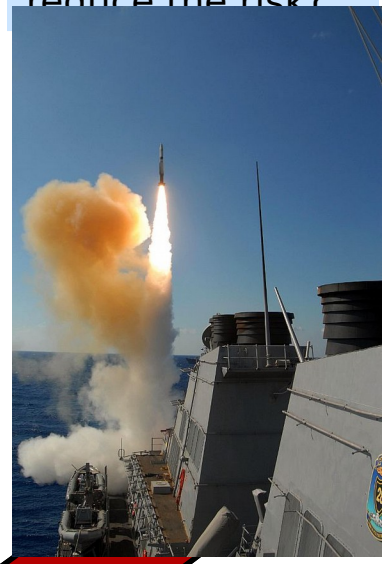
Assess → Balance Resources → Communicate → *D*o – *D*ebrief

Where am I?
What is going on?
What will happen next?

What are my options?
How do I use them?

Who needs to know?
Who can help?
Who can provide back-up? Revise if necessary

Carry out the plan.
Was mission successful?
Did actions reduce the risk?



Reconsider this situation...

It’s about informed decisions.

Summary

- **Humans are part of all Navy systems**
- **Managing the risk of human error improves capabilities and reduces losses**
- **ORM:**
  - A proactive, systematic tactic to defeat Blue Threats
  - A leadership tool to assist in making informed risk decisions
  - Should be integrated into your command planning, briefing, execution and after action processes
  - Relies on education, training, experience and teamwork
  - Requires outstanding communication skills at all levels

The Challenge

- **Engaged Leadership**
- **Support and actively promote integration of ORM**
  - On and Off Duty
  - Use Deliberate Assessment Process
  - Integrate TCRM - “What’s different today?”; “ABCD”
  - Support ORM Assessment at all levels
- **Use the resources and tools available**
- **Establish an environment where hazards can be identified by anyone at any time**
- **Provide feedback and share**
- **Work together to lookout for our shipmates (on and off duty) and preserve DOD resources in order to ensure mission readiness and help eliminate these…**

Thanks for your ~~attention~~

Questions?